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Cooperative Economic Insect Report

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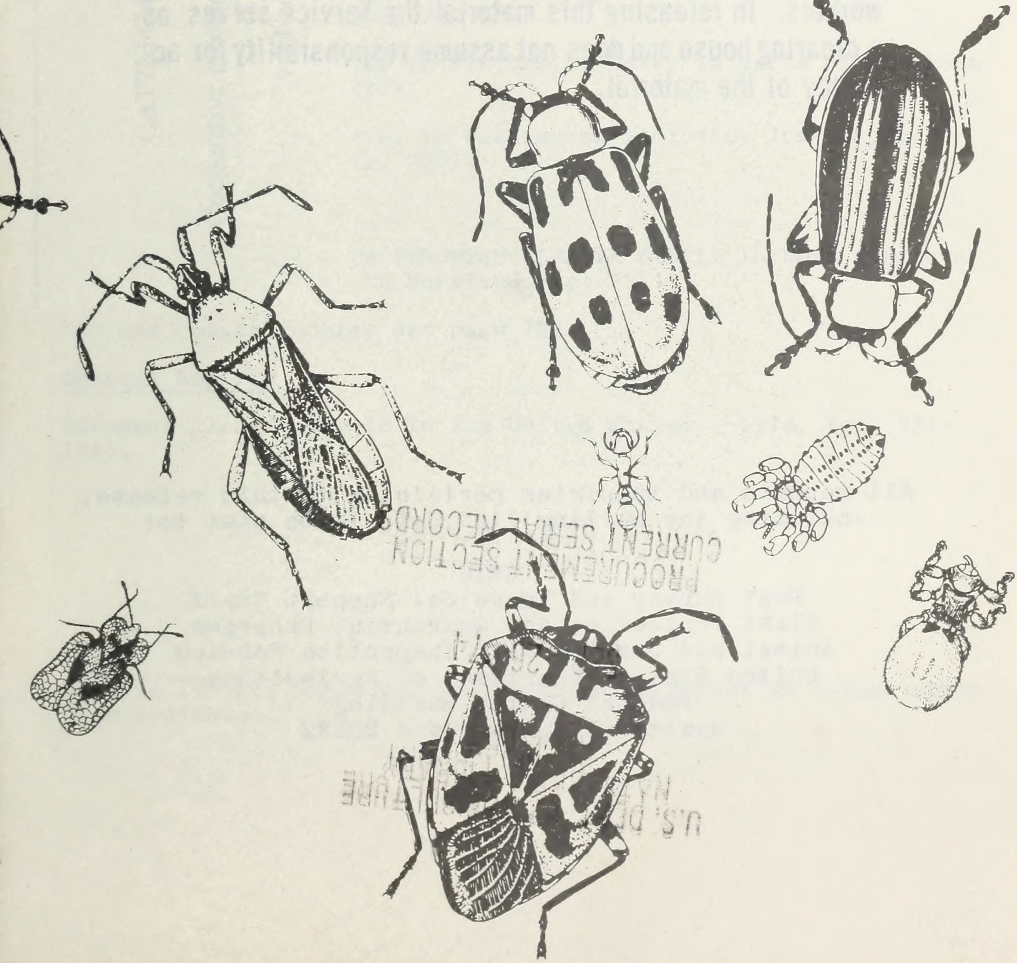
PLANT PROTECTION AND QUARANTINE PROGRAMS
ANIMAL AND PLANT HEALTH INSPECTION SERVICE
U.S.DEPARTMENT OF AGRICULTURE



CURRENT SERIAL RECORDS
PROCUREMENT SECTION

ANIMAL AND PLANT HEALTH INSPECTION SERVICE
PLANT PROTECTION AND QUARANTINE PROGRAMS
PEST SURVEY AND TECHNICAL SUPPORT STAFF

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Service serves as a clearing house and does not assume responsibility for accuracy of the material.

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Volume 24 September 6, 1974 Number 36

COOPERATIVE ECONOMIC INSECT REPORT

HIGHLIGHTS

Current Conditions

CORN EARWORM infestations in North Carolina soybeans not as severe as in 1973 and generally light over Mississippi; several hundred thousand acres of late soybeans in Arkansas vulnerable to infestation. (pp. 715-716).

CORN ROOTWORM annual adult survey in Minnesota showed increases in most areas over 1973. Beetle populations decreased on statewide basis in Illinois in 1974. (p. 717).

BOLL WEEVIL increased in cotton in south-central Texas, damage heavy in central area of State; activity increased in southeast Arkansas; damaging in other areas. BOLLWORMS still below control levels in Tennessee, oviposition heavy in Georgia, and pests serious threat in Alabama; heavy in some fields in all parts of Louisiana. (pp. 721-722).

HORN FLY annoyed cattle in Wisconsin, heavy in parts of Oklahoma and Texas. (pp. 725-726).

Adult GRASSHOPPER survey in Washington indicates lowest population in many years. (p. 726).

Detection

New State records were EUROPEAN ALFALFA BEETLE in West Virginia and a PENTATOMID BUG in Maryland. (p. 727).

For new county records see page 727.

Special Reports

European Alfalfa Beetle in the United States - 1974. (pp. 731-734).

Reports in this issue are for week ending August 30 unless otherwise indicated.

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WEATHER OF THE WEEK ENDING SEPTEMBER 2

Reprinted from Weekly Weather and Crop Bulletin supplied by National Weather Service, NOAA.

HIGHLIGHTS: A Low originating in Canada collided with warm, moist air surging upward from the gulf and produced good rains measuring over 2 inches across a wide area from central New England to Oklahoma and southward to Texas. Heaviest rainfalls were recorded at Waco, Texas, 7.75 inches and Lexington, Kentucky, 6.16 inches. Elsewhere, a High pressure ridge along the Pacific coast kept the Western States dry. The Nation's midsection recorded below normal temperatures last week. The greatest departure was at Fargo, North Dakota, where temperatures averaged 11 degrees below normal. Temperatures were near normal or above in the eastern and western portions of the country.

PRECIPITATION: Precipitation in varying amounts fell across the Nation's eastern two-thirds last week, while the Far West remained virtually dry. Rains measuring 2 to over 7 inches soaked a broad section from Texas northward to Oklahoma and northeastward to central New England. Good rains fell in many parts of the Corn Belt last week. Eastern New Mexico continued to receive above normal precipitation. Elsewhere, locally heavy 2-inch rains were reported in several cities along the southern Atlantic seaboard: Savannah, Georgia, 3.08 inches, Wilmington, North Carolina, 2.30 inches. Monday, a tropical depression over southeast Texas produced showers and thundershowers across eastern Texas and the western half of the gulf coast. As a Low moved northward, associated thundershowers flooded some streets and small streams in west-central and northwest Oklahoma on Tuesday. Rainfall measuring 5 to 7 inches in portions of central Texas triggered flash flooding in Killeen. Wednesday, showers and thundershowers continued along a moist, cold front which curved from New England through an almost stationary Low in northeast Oklahoma and then into west-central Texas. Widespread thundershowers produced some

Weather of the week continued on page 730.

SPECIAL INSECTS OF REGIONAL SIGNIFICANCE

ARMYWORM (*Pseudaletia unipuncta*) - SOUTH CAROLINA - Heavy countywide infestations of this species and *Spodoptera frugiperda* (fall armyworm) noted in Newberry County on sorghum, corn, and other forage crops. Some populations *S. frugiperda* only, some *P. unipuncta* only, and some mixed. This first report of *S. frugiperda* in State in 1974 and comes from same location as first 1973 report. (Thomas).

BEET LEAFHOPPER (*Circulifer tenellus*) - CALIFORNIA - Averaged 3 per 100 sweeps on roadside Russian thistle in Fresno County. Counts light on roadside weed hosts and in sugar beet fields near Los Banos, Merced County; heaviest counts 8 per 100 sweeps in beet field where no curly top found in 1,000 plants examined. No leafhoppers found on mustard or young sugar beets in Turner Island area of county. Tomatoes, beans, peppers, squash, and sugar beets checked in Santa Maria, Santa Ynez, Lompoc, and Buellton areas of Santa Barbara County showed little curly top damage and very light leafhopper counts. Curly top infestation of 10 percent found in one neglected field having heavy powdery mildew, many weeds, and needing water. (Cal. Coop. Rpt.).

CORN EARWORM (*Heliothis zea*) - NEW HAMPSHIRE - Second to fourth-instar larvae on late sweet corn at Milford, Hillsboro County, and Dover, Strafford County. (DelSignore). KENTUCKY - Larvae still light. About 85 percent of corn in dough stage or beyond compared to 75 percent this time in 1973. (Barnett). TENNESSEE - Larvae not damaging soybeans at present; however, moth flight expected next 10-12 days. If cotton has "cut out," and no late corn available for egg laying moths, late soybeans may become infested. Growers should keep close watch for larvae in pod-forming soybeans next 14-21 days. (Gordon). NORTH CAROLINA - Field surveys in 10 open canopy and 5 closed canopy soybean fields in Franklin, Nash, Halifax, Northampton, Bertie, and Edgecombe Counties revealed about half of larvae in fourth instar or larger. This is period when most pods damaged. Infestation not as severe as 1973, but economic in 5 of 10 open canopy fields examined. Infestation heaviest near Essex, Halifax County, with 4.5 larvae per row foot. No moths observed in fields and very few larvae found in late soybeans presently near peak bloom. (Hunt).

GEORGIA - Corn earworm larvae ranged light to moderate across peanut belt. (French). ALABAMA - Larvae occasionally found as pests in soybean fields throughout Mobile and Baldwin Counties. (Robinson, Strahan). MISSISSIPPI - In late-planted corn for silage in Pearl River County, 100 percent of ears infested with various instar larvae. (Combs). Infestations in soybeans generally light over State. Economic levels lighter in late-planted fields isolated from cotton. In Humphries County, one 300-acre field of late-planted soybeans isolated from cotton with eggs on 10 percent of plants. (Hillhouse).

ARKANSAS - Corn earworm larvae ranged 2-3 per row foot in heads of sorghum in dough stage in Arkansas County. Found in 11 of 25 soybean fields surveyed in southeast area. Larvae ranged 2-43 per 30 row feet in infested fields; averaged 12.7 per 30 row feet in infested fields, average for all fields 5.6. Early soybeans finished blooming and fully podded probably safe from possible infestation. Several hundred thousand acres of late soybeans vulnerable to infestations by corn earworm will have to be watched for some time. (Boyer). MISSOURI - Light in sorghum in southern areas. Counts ranged 0-38 small larvae per 100 heads. Spodoptera frugiperda (fall armyworm) larvae ranged 0-12 per 100 heads. (Munson). WISCONSIN - Few H. zea moths in light traps. If problem is to develop moths should increase in blacklight traps soon. Cool weather may be inhibiting moth activity and there may be more moths present than blacklight trap catches indicate. (Wis. Ins. Sur.).

WASHINGTON - Damage by corn earworm to experimental corn plantings near Othello, Adams County, increased; up to 57 percent damage noted on one variety. Populations in field corn and sweet corn lighter than usual in Prosser area of Benton County and nearby lower Yakima County. Blacklight trap catches ranged 1-2 moths per night; in past years heavy catches consisted of hundreds per night. (Antonelli, Klostermeyer). UTAH - Larval infestation ranged 4-6 percent in 2 cornfields at Smithfield, Cache County. (Knowlton). NEW MEXICO - Counts ranged up to one larva per ear with one of three ears infested in Torrence County corn. (N.M. Coop. Rpt.).

GREENBUG (Schizaphis graminum) - SOUTH DAKOTA - Infested sorghum fields in Charles Mix and Brookings Counties noted with buildup of parasites and predators. In two fields where greenbug not controlled with chemical treatments, lacewings and parasites eliminated resistant population. Population still moderate to heavy in other randomly selected fields, close observation needed. Cooler temperatures will allow S. graminum populations to outpace parasites and predators. (Walgenbach). ARKANSAS - Light in sorghum in Arkansas County. Indications are that this pest had been present in rather light numbers on widespread basis, but apparently predators, parasites, and possibly disease had reduced counts. (Boyer). TEXAS - Light on sorghum in Pecos and Reeves Counties. (Neeb). NEW MEXICO - Ranged up to 20 per leaf on sorghum near Clovis, Roosevelt County. (N.M. Coop. Rpt.). CALIFORNIA - Problem on milo in Sacramento and San Joaquin Valleys this season. Treatments still being made in some fields. (Cal. Coop. Rpt.).

POTATO LEAFHOPPER (Empoasca fabae) - INDIANA - Surveys difficult in southern districts due to rains; however, no apparent economic infestations noted in 29 alfalfa fields surveyed. Populations in northern districts increased. Apparent decrease noted in northwest district due to harvesting of most heavily populated field, but increases noted in all other fields. North-central district increased from average of 9 per 10 sweeps to 10 and northeast district increased from average of 13 per 10 sweeps to 18. Immatures ranged from one-sixth to one-third adult total. (Ballard, Meyer). WISCONSIN - Populations over most of State remained at about 1-3 per sweep in soybeans with very few exceptions. If weather remains cool pest will be of reduced importance to late filling soybeans. (Wis. Ins. Sur.).

TOBACCO HORNWORM (Manduca sexta) - KENTUCKY - Began to increase in tobacco. Larvae, mostly first and second instar, averaged 5 per 100 plants. Populations of Heliothis spp. (budworms) somewhat lighter. About 80 percent of burley topped with about 20 percent of tobacco cut. (Barnett et al.).

CORN, SORGHUM, SUGARCANE

CORN ROOTWORMS (Diabrotica spp.) - SOUTH DAKOTA - Damage noted in several cornfields in Alcester area, Union County. Corn treated at planting and had moderate to severe root damage. Stalks lodged and tangled to extent row could not be followed across field. Growers and dealers requested to check fields and report all cases of rootworm damage. (Walgenbach). MINNESOTA - Annual survey completed. Five fields again chosen at random in each county in corn-growing districts. Beetle counts made in fields that were in corn in 1973. Reduced populations found only in east-central district. Increased in all other districts with 2-fold increases over 1973 found in 2 districts. Much increase in lodging noted, from average of one percent in 1973 to 10 percent in 1974. In at least southeast district, some additional lodging explained partly by unusually severe storms. Reason not easily defined in other areas. Evaluations to be made to determine if chemical controls ineffective due to moisture conditions or if beetles have developed resistance. D. virgifera (western corn rootworm) slightly more numerous (51 percent overall average) than D. longicornis (northern corn rootworm) 49 percent overall average. (Minn. Pest Rpt.).

WISCONSIN - Annual Diabrotica spp. adult survey about complete except for extreme northern and northeastern counties. Corn silks completely browned in several southwest counties and beetles have abandoned fields. Much root damage by larvae and heavy silk feeding by adults evident in several fields in western counties, but beetles have left fields in many cases. Survey revealed several fields had heavy larval damage earlier in season. Individual fields in St. Croix, Wood, Calumet, Winnebago, Columbia, Monroe, and Vernon Counties had 30-100 percent lodging in all or parts of fields. Many fields on slopes with 5-10 percent lodging; many of these fields received soil treatments at planting time. Heavy spring rains may have washed insecticide from root zone of corn. (Wis. Ins. Sur.). ILLINOIS - Beetle populations of D. longicornis (northern corn rootworm) and D. virgifera (western corn rootworm) decreased about 15 percent on statewide basis in 1974. Diabrotica spp. decreases recorded in 7 of 9 districts surveyed with no beetles found in 4 districts. In 1973, these 4 normally light districts averaged 6+ beetles per 100 corn plants. In northernmost 5 districts, where Diabrotica spp. populations traditionally heavy, populations decreased from average of 74 adults per 100 plants to 64 in 1974. Largest decrease was in northeast district where beetles averaged 103 per 100 plants in 1973 and 48 in 1974. Counts increased from 25 to 30 in west district and from 74 to 117 in central district in 1974. Of beetles found, 39 percent D. virgifera. (Ill. Ins. Rpt.). KENTUCKY - D. longicornis heavy in Daviess County corn. (Barnett, Gregory).

WESTERN CORN ROOTWORM (Diabrotica virgifera) - INDIANA - Spectacular adult flight noted in Dunes State Park, Porter County, August 24. Mating clusters noted on ground and vegetation. Adults caused extreme annoyance by alighting on people, cars, and picnic tables. (Brattain). NORTH DAKOTA - Adults averaged 6 per plant in field of grain corn in Cass County. About 40 percent of plants lodged. (Brandvik). UTAH - Damage evident in some poorly pollinated sweet corn at Smithfield and Logan, Cache County. Corn stunted at one location at Logan and mostly lodged due to heavy larval infestation. Corn lodged at Hooper and Plain City, Weber County. (Knowlton, Roberts).

EUROPEAN CORN BORER (Ostrinia nubilalis) - WISCONSIN - Blacklight trap catches indicated reduced moth activity due to cooler evening temperatures. Egg masses and larval feeding scarce in most sweet corn; however, few fields of sweet corn in southern districts with feeding evident on up to 60 percent of plants. Moth activity much reduced in Fond du Lac, Sheboygan, and Rock Counties, eggs difficult to find in any field. Observations in Piece and St. Croix County area revealed few egg masses on field or sweet corn, but up to 3 first-instar larvae found in silks of about 40 percent of plants in one field of field corn. Ear damage by first-generation larvae common between Wausau and New Richmond; general first-generation infestation apparently relatively heavy throughout same area. Outlook for next few weeks uncertain. Longer, cooler nights have adverse effect on this pest, but change to warmer weather might cause some problems to develop on late sweet corn. Growers advised to watch fields closely to determine necessity for treatment. (Wis. Ins. Sur.).

SOUTHWESTERN CORN BORER (Diatraea grandiosella) - MISSOURI - Counts in southwest area showed zero to 15 percent of field corn infested. Windstorm in area caused most infested plants to lodge. (Munson). NEW MEXICO - Some activity noted in corn in Roosevelt County. (N.M. Coop. Rpt.).

SORGHUM MIDGE (Contarinia sorghicola) - TEXAS - Midge emergence increased in sorghum in counties near Lubbock. Total emergence in sorghum for 1974 lighter than in 1973. Midge emergence should increase considerably. This pest also observed in few fields in northern part of Hale County area. (McIntyre, Latham).

BANKS GRASS MITE (Oligonychus pratensis) - TEXAS - Continued to decrease on sorghum in Pecos and Reeves Counties; due primarily to recent rains in area. Again caused concern to some South Plains producers. Warmer weather past 7 days again caused populations to increase. Numerous fields throughout High Plains area treated. Recent rains in High Plains area expected to again decrease populations. (Neeb et al.). NEW MEXICO - Populations decreased in sorghum in Luna and Grant Counties; 1-2 colonies per plant reported in Roosevelt County with no visible damage. (N.M. Coop. Rpt.).

TURF, PASTURES, RANGELAND

LESSER CORNSTALK BORER (Elasmopalpus lignosellus) - OKLAHOMA - Infested about 50 percent of stalks in field of hybrid Sudan grass in Cleveland County. (Okla. Coop. Sur.).

FALL ARMYWORM (Spodoptera frugiperda) - ALABAMA - Larvae ranged 1-5 per stalk of Sudan grass in research plots at Atmore, Escambia County. (Lemons).

GREEN JUNE BEETLE (Cotinus nitida) - MISSOURI - Although adult populations lighter in pastures than in 1973, counts in one test area ranged 50-60 larvae under each hay bale. (Huggans).

TWOLINED SPITTLEBUG (Prosapia bicincta) - ALABAMA - Nymphs and adults heavy and widespread in Mobile County, damaged lawn grasses and one commercial grass farm. Heavy in lawns at two locations in Lee County. (Strahan, Henderson).

SOUTHERN MOLE CRICKET (Scapteriscus acletus) - ALABAMA - Adults badly damaged golf greens in park at Monroeville, Monroe County. Treatments applied. (Lemons).

FORAGE LEGUMES

ALFALFA WEEVIL (Hypera postica) - MISSOURI - Counts in alfalfa in east-central and central areas ranged 0-13 adults per 10 sweeps. Larvae very light in most fields checked. (Munson). NEW MEXICO - Up to 5 adults and 25 larvae per 25 sweeps recovered from alfalfa in Torrence County. (N.M. Coop. Rpt.).

MEXICAN BEAN BEETLE (Epilachna varivestis) - INDIANA - Adult infestation in south-central district alfalfa fields about same as previous week. Average counts per 10 sweeps by county as follows: Harrison 3, Washington 6, Jackson 1. Adults averaged 13 per 10 sweeps in one field. Larvae taken in several fields. (Meyer).

PEA APHID (Acyrthosiphon pisum) - ARIZONA - Averaged 320 per 100 sweeps of alfalfa in west Phoenix area of Maricopa County. (Ariz. Coop. Sur.).

MEADOW SPITTLEBUG (Philaenus spumarius) - INDIANA - Adults averaged about 8 per 10 sweeps in southwest district alfalfa, increased from 12 per 10 sweeps to 17.5 per 10 sweeps in south-central districts. Averaged 1, 3, and 6 per 10 sweeps in northwest, north-central, and northeast districts, respectively. (Ballard).

GUAR MIDGE (Cecidomyia texana) - TEXAS - Heavy in guar fields in Haskell, Knox, Hardeman, and Wilbarger Counties. Generally light on guar in Nueces, Uvalde, McCulloch, and Zavala Counties. (Boring, Rogers).

FIELD CRICKETS (Gryllus spp.) - NORTH DAKOTA - Up to 20 per square yard in alfalfa and flax in Cass County. Some light boll clipping in flax. Ranged up to 200 per square yard in field margins and roadsides. Problem in homes and other buildings. (Brandvik).

SOYBEANS

VELVETBEAN CATERPILLAR (Anticarsia gemmatalis) - NORTH CAROLINA - Heavy populations in soybeans experienced in 1973 have not materialized in 1974. To date, samples in 70 fields scattered over Coastal Plain revealed very few larvae. Little damage expected except possibly to very late soybeans. (Hunt). GEORGIA - Infestations light to heavy in many Berrien County fields, treatments necessary. (Wood, Suber).

SOYBEAN LOOPER (Pseudoplusia includens) - LOUISIANA - Larvae defoliated 100 percent of 50 acres in St. Landry Parish. Pods not filled, too late for full recovery. Controls applied too late. Estimated loss at 10-15 bushels per acre. (Coburn, Jensen).

FALL ARMYWORM (Spodoptera frugiperda) - TENNESSEE - Larvae heavy and fed on late soybeans in Lake County. Controls in order in some cases. (Martin, Johnson).

MEXICAN BEAN BEETLE (Epilachna varivestis) - MISSISSIPPI - Moderate in soybeans in George County. Larval counts and foliage damage increasing. (Robinson).

BEAN LEAF BEETLE (Cerotoma trifurcata) - MISSISSIPPI - Increased in northeastern area. Some defoliation near economic levels. (Robinson).

SOUTHERN GREEN STINK BUG (Nezara viridula) - ALABAMA - Increased and damaged pods in numerous fields in Baldwin and Mobile Counties. (Robinson, Strahan).

REDLEGGED GRASSHOPPER (Melanoplus femurrubrum) - WISCONSIN - Continued moderate to heavy in field margins near grassy roadsides but still light within fields. (Wis. Ins. Sur.).

TWOSPOTTED SPIDER MITE (Tetranychus urticae) - IOWA - Infested 3 fields in Polk, Guthrie, and Madison Counties. Infestations heavy in small portions of fields, apparently spreading. Some plants killed. (Iowa Ins. Sur.).

COTTON

BOLL WEEVIL (Anthonomus grandis) - TEXAS - Populations appear to have increased in many south-central counties. Most increases appear due to concentration in terminals of mature cotton. Many producers in central area experienced heavy damage. Heavy infestations noted in irrigated fields in Knox, Baylor, and Wilbarger Counties of Rolling Plains; 40-85 percent square damage observed. Increased boll damage in these fields also evident. Controls were scheduled to start first part of last period in High Plains diapause control program. Counties where control to be conducted in Rolling Plains are Motley, Dickens, Kent, and Hall. Very light to no activity detected in fields in St. Lawrence Community, Glasscock County; weevils light in isolated fields in eastern part of county. In fields east of Garden City, weevil activity light with one punctured square observed for 500 squares inspected. (Cole et al.).

OKLAHOMA - Boll weevil punctured squares ranged up to 53 percent in Tillman County, up to 38 percent in Jackson County, up to 33 percent in Kiowa County, up to 28 percent in Greer County, up to 8 percent in Harmon County, and ranged 7-49 percent in Grady County. (Okla. Coop. Sur.). ARKANSAS - Activity increased in most of southeast area, but numbers not at high level except in few isolated cases. (Boyer). LOUISIANA - Percent of fields checked at or above economic threshold as follows by parish: St. Martin 40, Catahoula 69, Bossier zero, St. Landry 62, and Rapides 6. (St. Cloud, Couburn). MISSISSIPPI - Weevils and larvae numerous in most fields in hill sections. Many fields with 50+ percent punctured squares. (Robinson). ALABAMA - Infestation continued at 5-20 percent square damage in most of 600,000 acres of cotton, with counts of 10-40 percent in much of northern area cotton. Treatments applied throughout State. Damage heavier in mountain and valley cotton of northern area than in several years. (McQueen).

GEORGIA - Boll weevil population pressure not as heavy in cotton as previous 2 weeks, probably due to good control efforts and fewer showers. Average percent punctured squares by county as follows: Burke 6, Colquitt 24, Crisp 12, Dooly 3, Terrell 12. Populations below economic threshold in many fields. (Boone). TENNESSEE - Punctured squares ranged 9-43 (average 23) percent in Fayette County. Most fields in McNairy County at 20-percent level, with counts heavier in few fields. Many fields in Henderson County above 30 to 50-percent punctured squares level; heavier than last period. Conditions still ideal for further damage increase. Migration continued to fields of rank cotton. Controls difficult, but results better than expected. Frequent rains disrupted control pattern and some infestations in "run-away" status. (Locke, Patrick). In central area, punctured squares ranged 20-97 percent in fields surveyed. Cotton in area "cutting out" and square counts did not reflect true picture as only few squares left in fields. (Cagle).

BOLLWORMS (*Heliothis* spp.) - TENNESSEE - *H. zea* (bollworm) continued below control levels in all areas. Very unusual for this time of year. (Patrick et al.). GEORGIA - *H. zea* oviposition still heavy with up to 206 eggs per 100 terminals in many fields. Eggs per 100 terminals averaged as follows by county: Burke 17, Colquitt 21, Crisp 33, Dooly 16, Terrell 32. Larvae per 100 terminals ranged 2-4. (Boone). ALABAMA - *Heliothis* sp. much heavier and over wider area of State than past 3-5 years. With shortages of proper larval insecticides and improper applications, bollworms pose serious threat to thousands of acres in all parts of State next 21 days. (Smith et al.).

MISSISSIPPI - *H. zea* and *H. virescens* moths continued to lay eggs in green cotton. Some cotton "cutting out" and unattractive. In Noxubee County where cotton still green, 90-95 percent of population *H. virescens*. Heaviest infestations appear to be in hill counties where 50-75 percent of terminals infested with eggs and small larvae in some fields. However, in some fields in Quitman, Coahoma, Sharkey, Sunflower, and Tallahatchie Counties, 20-30 percent of plants with eggs. (Robinson). LOUISIANA - Percent of fields checked for *Heliothis* spp. and at or above economic threshold as follows by parish: St. Martin 24, Catahoula 39, Bossier 29, St. Landry 19, and Rapides 26. (St. Cloud, Coburn). Larvae of *H. virescens* (tobacco budworm) destroyed 50 acres of cotton in Rapides Parish. Controls ineffective. *Heliothis* spp. larvae heavy in some fields in all parts of State. Egg laying continued, all fields subject to egg laying. Green, tender growth most attractive to moths. No decrease in egg laying expected next 7 days. *H. virescens* comprises high percentage of larvae in cotton and will continue so remainder of season. These larvae difficult to control with chemicals available, therefore there will be more larvae and more larval damage after control applications than in previous years. Next 21 days are critical period for larval control. (Tynes).

ARKANSAS - *H. zea* and *H. virescens* increased in most of southeast area. Control effective in most cases except few isolated areas in Ashley and Arkansas Counties where populations, primarily *H. zea*, difficult to control. Overall controls below normal. Number of fields not treated as yet in Jefferson County, which is unusual. Many other fields treated for first time this period.

Record of light trap catches (one trap per location) as follows: Coy (August 14-20) H. zea 3,612, H. virescens 46; Newport (August 16-24) H. zea 99, H. virescens zero; Kelso (August 22-28) H. zea 80, H. virescens 7; Pickens (August 22-28) H. zea 297, H. virescens 8. Heliothis spp. moths in light traps continued heavier at Coy, Lonoke County, than any other area. (Boyer). OKLAHOMA - Heliothis spp. eggs ranged 7-60 per 100 terminals in Jackson, Tillman, Greer, Kiowa, and Harmon Counties, larvae ranged 8-18 per 100 terminals, and damaged squares ranged 6-20 percent. Damaged squares ranged 5-10 percent in Grady County. (Okla. Coop. Sur.).

TEXAS - H. zea and H. virescens very heavy in green succulent cotton throughout south-central area. Examinations showed 85-100 percent of larvae collected from infested fields were H. virescens. Fields which had defoliants applied show large reduction in Heliothis spp. eggs. Increased activity reported in irrigated fields in Wilbarger and Knox Counties. About half of larvae in most fields H. virescens. These infestations caused heavy square damage in some fields. Activity light in Fisher and Kent Counties. H. virescens increased in most fields in Trans-Pecos area; comprised about 70 percent of population in area. In Pecos and Reeves Counties, 5-50 eggs per 100 terminals with 0-12 small larvae; 3-15 percent damaged squares reported per 100 terminals. In Glasscock, Reagan, Upton, Midland, and Martin Counties, eggs ranged 0-20 per 100 terminals with 0-4 small larvae, and 0-8 percent damaged squares per 100 terminals. (Cole et al.). ARIZONA - Heliothis spp. being closely watched on young cotton at Yuma, Yuma County. (Ariz. Coop. Sur.).

BEET ARMYWORM (Spodoptera exigua) - OKLAHOMA - Moderate to heavy in cotton in Jackson and Greer Counties. (Okla. Coop. Sur.). ALABAMA - Larvae light to moderate in many Russell County fields. Some larvae noted in Autauga County. (Lowery, Horn). GEORGIA - Treatments required to control heavy infestations, up to 27 percent damaged squares, in Dooly County. (Boone).

CABBAGE LOOPER (Trichoplusia ni) - OKLAHOMA - Heavy in cotton in Jackson and Greer Counties, moderate in Harmon and Tillman Counties. Larvae dying of virus disease in some Jackson County areas. (Okla. Coop. Sur.). MISSISSIPPI - Heavy egg deposition noted in Noxubee, Monroe, and Ittawamba Counties. Some light defoliation occurring; however, as usual this time of year, many larvae diseased. (Robinson).

BANDEDWING WHITEFLY (Trialeurodes abutilonea) - MISSISSIPPI - Damaging populations developed where conditions good. Most fields have heavy populations around borders. Where damage present, infestations general throughout field. (Robinson).

TOBACCO

GREEN PEACH APHID (Myzus persicae) - KENTUCKY - Populations peaked in central area tobacco August 15-20 and decreased during past week. (Barnett et al.).

TOBACCO FLEA BEETLE (Epitrix hirtipennis) - KENTUCKY - Adults remained lighter in tobacco than at this time in past years. (Barnett et al.).

POTATOES, TOMATOES, PEPPERS

EUROPEAN CORN BORER (*Ostrinia nubilalis*) - DELAWARE - Infestations in untreated sweet peppers averaged 45 percent in western Sussex County. Adults in blacklight trap collection averaged 50 per night in this area. (Burbutis).

TOMATO PINWORM (*Keiferia lycopersicella*) - NEVADA - Heavily infested tomatoes in Las Vegas area, Clark County. Populations and damage above previous years. (Zoller).

BEANS AND PEAS

EUROPEAN CORN BORER (*Ostrinia nubilalis*) - WISCONSIN - Moth flight still very heavy in Jefferson and Columbia Counties. Although counts in other areas of State still heavy, they have started to decrease. No egg masses or early instar larvae found in beans checked in Portage County. Egg laying should continue next 7 days and depending on temperatures, egg hatch should occur for another 7-14 days. (Wis. Ins. Sur.).

COLE CROPS

CABBAGE LOOPER (*Trichoplusia ni*) - WISCONSIN - Pheromone trap catch in field of cabbage in Columbia County indciates moth flight well underway. Small larvae observed in Columbia County as well as field in eastern Waupaca County. Egg hatch should continue next 7-14 days in Columbia County area. (Wis. Ins. Sur.).

GENERAL VEGETABLES

GRANULATE CUTWORM (*Feltia subterranea*) - ALABAMA - Damaging larval infestation in 1,000+ acres of sweetpotatoes in Cullman County brought under control by quick and through effort on part of concerned growers. (Spears).

GLASSY CUTWORM (*Crymodes devastator*) - OREGON - Moths in Willamette Valley blacklight traps continued to decline since peak of first week of August. Adults taken at St. Paul, Marion County, as follows: 2,093 August 8-14; 1,519 August 15-21. (Penrose).

CABBAGE LOOPER (*Trichoplusia ni*) - OREGON - First reported adult of season in Willamette Valley taken in blacklight trap at Coburg, Lane County, during period August 22-25. (Penrose).

ASPARAGUS BEETLE (*Crioceris asparagi*) - NEVADA - Adults active on asparagus at Weeks, Lyon County, August 21, 1974. Collected and determined by R.C. Bechtel. This is a new county record. (Bechtel).

DECIDUOUS FRUITS AND NUTS

PECAN WEEVIL (Curculio caryae) - GEORGIA - Adults emerged at slightly reduced rate in Peach County. (Payne). Adult emergence declined to one per trap per week in Pike County. (Tippins). Adult populations normally rise and fall several times. Increased emergence can be triggered by rainfall and emergence will vary from area to area. Pecan growers should continue recommended treatments on schedule. (Harris). MISSISSIPPI - Emergence noted in Hinds, Newton, Rankin and other southern area counties. (Robinson). OKLAHOMA - Heavy on Kay County pecans. Treatments applied in most southwest counties. (Okla. Coop. Sur.). TEXAS - Very heavy on pecans in counties around Erath County. Field checks in Hamilton County indicated up to 15-25 weevils per tree. In Erath County, weevils averaged 6 per tree. Most pecans still in water stage and feeding caused pecans to shed prematurely from trees. Pecan producers with heavy emergence will need insecticide application now to prevent shed of pecans and repeated applications may be needed after pecans reach dough stage. Controls applied in Young and Baylor Counties. (Hoelscher, Boring).

FILBERTWORM (Melissopus latiferreanus) - OREGON - Adult catches in blacklight trap at Pleasant Hill, Lane County, declined substantially during late August indicating moth activity about complete in southern portion of Willamette Valley. Counts as follows: 87 August 8-14; 50 August 15-21; one August 22-24. (Tinker).

YELLOW PECAN APHIDS (Monellia spp.) - MISSISSIPPI - Heavy on pecans in Lowndes, Noxubee, Oktibbeha Counties. (Robinson). TEXAS - Very heavy in pecans in portions of some counties throughout south-central area. Moderate in home orchards in Wilbarger, Wichita, Baylor, Knox, Throckmorton, and Young Counties. Ranged 0-80 per compound leaf on pecan trees in Pecos, Reeves, Glasscock, Upton, and Ward Counties. (Cole et al.).

BLACK PECAN APHID (Tinocallis caryaefoliae) - GEORGIA - Occasional light populations caused light damage in Peach County (Gentry); caused light damage in Tift County (French).

ORNAMENTALS

A WEEVIL (Otiorhynchus meridionalis) - NEVADA - Adults caused moderate damage to lilac at Virginia City, Storey County. Collected by L.W. Barclay and R.C. Bechtel August 21, 1974. Determined by R.C. Bechtel. This is a new county record. (Bechtel).

A MEALYBUG (Ehrhornia cypressi) - NEW MEXICO - Heavy on Arizona cypress at University Park, Dona Ana County. Originally collected April 20, 1974. Activity continued throughout summer. (N.M. Coop. Rpt.).

FOREST AND SHADE TREES

SOUTHERN PINE BEETLE (Dendroctonus frontalis) - SOUTH CAROLINA - Known and suspected outbreak areas surveyed during June, July, and early August 1974. Decline noted in Piedmont section during early observations where outbreak began in 1971; involved Cherokee, York, Union, and Spartanburg Counties. Other sections continue to have many active areas. Survey now being conducted in Piedmont to evaluate current conditions. Coastal counties currently area of most concern. Beetle activity increased significantly since March 1974 survey. Outbreak covers parts of Beaufort, Jasper, Charleston, Dorchester, Berkeley, Georgetown, Williamsburg, and Horry Counties. Population increasing rapidly in most spots. Presuppression flights made in heavily infested areas. Attempt at promptly salvaging as many spots as possible in progress. This is essential to minimize losses and prevent spread of D. frontalis. (Thomas). ALABAMA - Several small infestations in pines noted in southern Baldwin County. Trees being killed. (Strahan, Hertel).

BLACK TURPENTINE BEETLE (Dendroctonus terebrans) - ALABAMA - Numerous larvae and adults damaged 4 to 6-inch pines in farm planting at Rangeville, De Kalb County. Treatments applied. (Braham).

AN ENGRAVER BEETLE (Ips calligraphus) - ALABAMA - Infestations of this species and I. avulsus killed numerous pine trees in groups of 2-40 in several locations at Summerdale, Baldwin County, and in Mobile and Lee Counties. (Hertel et al.).

ELM LEAF BEETLE (Pyrrhalta luteola) - SOUTH CAROLINA - Heavy infestation noted on elms in Pickens County. (Pollet). OKLAHOMA - Third-generation larval populations and damage increasing rapidly on Siberian elms in Payne County area. (Okla. Coop. Sur.).

MAN AND ANIMALS

HORN FLY (Haematobia irritans) - FLORIDA - Averaged 250 per head on cross-bred steers at Belle Glade, Palm Beach County; lighter than usual for time of year. (Fla. Coop. Sur.). MISSISSIPPI - Ranged 150-200 per head on Oktibbeha County untreated pastured beef cattle. (Combs). ARKANSAS - Counts per head on cattle by county: Giles 25-100, Weakley 10-25. (Watson, Turpen). INDIANA - Populations of this species and unspecified horse flies decreased to negligible on several lots of black cattle on experimental farm in Grant County. (Dobson). Horse flies very heavy in Warren County especially in late afternoon and early evening. Attacks numerous on calves, horses, and sheep. Wooded pastures avoided by grazing livestock, many stop grazing at sunset to seek shelter. (Chandler). ILLINOIS - Horn fly counts per head on pastured cattle averaged as follows by county: Grundy 11, Peoria 153, De Witt 248. (Ill. Ins. Rpt.).

WISCONSIN - Horn fly quite bothersome to cattle in some areas, about 65 per side common on some herds. Some decrease in activity observed due to cooler weather, but activity intense on some herds in early afternoon when temperature at maximum. (Wis. Ins. Sur.). OKLAHOMA - Ranged 800-1,000 per head on cattle in Ellis County, averaged 200 per head in Payne County. Heavy in Comanche County, moderate in Haskell and Pontotoc Counties. (Okla. Coop. Sur.).

TEXAS - Horn fly in Bell, Falls, and McLennan Counties, ranged 1,000-1,500 per animal. These heavy populations caused body sores on lower areas of cattle. Counts moderate to heavy on cattle in Pecos, Terrell, Upton, Crockett, and Reagan Counties. Light to moderate on cattle in Brewster and Jeff Davis Counties. (Hoelscher, Neeb).

NEW MEXICO - Horn fly ranged up to 1,000+ per head on range cattle in Grant and Catron Counties. Some of these cattle appeared to be a swarming mass of flies. (N.M. Coop. Rpt.). UTAH - Moderate on range cattle in Tony Grove Canyon in Cache County. (Knowlton). COLORADO - Ranged up to 200 per head on untreated Weld County cattle. (Hantsbarger).

FACE FLY (*Musca autumnalis*) - ARKANSAS - Ranged 10-25 per head on cattle checked in Giles County; none found in Weakley County. (Watson, Turpen). ILLINOIS - Average counts per head on pastured cattle by county: Grundy 20, Peoria 50, De Witt 16. (Ill. Ins. Rpt.). INDIANA - Ranged 0-25 (average 10) per face on several lots of black cattle on experimental Grant County farm. (Meyer). MISSISSIPPI - Averaged 20+ per face on cattle in Monroe, Lee, and Chickasaw Counties. In Oktibbeha County, ranged 2-3 per face on 35 beef cows. (Robinson).

STABLE FLY (*Stomoxys calcitrans*) - WISCONSIN - Annoyance to cattle moderate in Rock and Kewaunee Counties. (Wis. Ins. Sur.). ILLINOIS - Average counts per head on pastured cattle by county: Grundy 0.6, Peoria 2.6, De Witt 8.4. (Ill. Ins. Rpt.).

MOSQUITOES - OKLAHOMA - Numerous and annoying in evening hours in Payne County area. At least two *Psorophora* spp. present and light *Anopheles* spp. populations taken. *Psorophora* spp. larvae ranged up to 60 per dip in some areas of county. (Okla. Coop. Sur.). MINNESOTA - Light trap collections in Metropolitan Mosquito Control District totaled 4,360 female mosquitoes during period August 17-23; this about 3 times total captured previous period and largest total since week of July 13. In evening bite collections, *Aedes vexans* 95 percent and *A. stimulans* 5 percent. In daytime field collections *A. vexans* and *A. stimulans* again most important species; 10 other species also taken. *A. triseriatus* present in 59 percent of larval collections, *Culex restuans* in 19 percent. (Minn. Pest Rpt.).

FEDERAL AND STATE PLANT PROTECTION PROGRAMS

A GRASSBUG (*Labops hesperius*) - UTAH - Active in wet meadows in Ephraim Canyon, Sanpete County, at 9,000 feet elevation; averaged 35 per 5 sweeps and 5 per 10 sweeps at 10,000 feet elevation August 23. Giant ryegrass and intermediate wheatgrass badly discolored and damaged. (Haws).

GRASSHOPPERS - WASHINGTON - Recently completed rangeland adult survey indicates lowest population in many years. Less than 35,000 acres with 8 or more grasshoppers per square yard. *Melanoplus sanguinipes* adults migrated across highway east of Prosser and Benton City, Benton County, and at Moxee, Yakima County. Other localized infestations present in Adams, Okanogan, Ferry, Stevens, and Spokane Counties. (Jackson).

JAPANESE BEETLE (Popillia japonica) - OHIO - Adults fed on soybeans in Scioto County. Ranged up to 5 per plant, but counts varied from one per 2 row feet to one per 50 row feet. Mating observed. (Fox).

PINK BOLLWORM (Pectinophora gossypiella) - ARIZONA - Treatments applied to younger cotton stands at Yuma, Yuma County. Picking and ginning underway. Defoliation treatments made to many acres in county. Larval counts still light at Safford, Graham County. Overlapping generations present in Marana area, Pima County. Few cotton fields on spray program but larval counts light. Spray treatments continued in Maricopa County. No larvae found in wild cotton checked in Texas Canyon in Cochise County. (Ariz. Coop. Sur.). NEW MEXICO - Two damaged bolls recovered. Total of 40 moths collected from sex lure traps indicating 25-percent increase in flight activity over last period in Dona Ana County. (N.M. Coop. Rpt.). TEXAS - Populations noted in cotton throughout most central counties. Late set bolls have numerous larvae. Field cleanup will be necessary to reduce populations for next year. Light to moderate numbers reported in isolated fields in Pecos and Reeves Counties. In Glasscock, Reagan, and Upton Counties, boll infestations light with isolated areas having moderate infestations. (Hoelscher, Neeb).

WHITEFRINGED BEETLES (Graphognathus spp.) - ALABAMA - Adults feeding freely in large numbers on peanuts, soybeans, and other plants over several square miles of cropland in the New Brockton area of Coffee County, in the Hartford area of Geneva County, and in the Lockhart area of Covington County. (Johnson).

DETECTION

New State Records

EUROPEAN ALFALFA BEETLE (Subcoccinella vigintiquatuorpunctata) WEST VIRGINIA - Adults collected on bouncing bet at Shenandoah Junction, Jefferson County, at Hancock, Morgan County, and in Berkeley County, August 27, 1974, by J.D. Hacker. Determined by R.D. Gordon. (Hacker).

A PENTATOMID BUG (Proxys punctulatus) - MARYLAND - Adult taken in blacklight trap at marine terminal at Cambridge, Dorchester County, July 12, 1974, by R.L. Davis. Determined by J.L. Herring. (PPQ).

New County Records - ASPARAGUS BEETLE (Crioceris asparagi) NEVADA - Lyon (p. 723). A WEEVIL (Otiorhynchus meridionalis) NEVADA - Storey (p. 724).

CORRECTIONS

CEIR 24(35):693 - TURF, PASTURE, RANGELAND - RANGE CATERPILLAR (Hemileuca oliviae) - Delete note. Should have read GRASSHOPPERS. (N.M. Coop. Rpt.).

HAWAII INSECT REPORT

General Vegetables - Pupae of DIAMONDBACK MOTH (Plutella xylostella) light to moderate in 2 acres of head cabbage at Kula, Maui. Larvae and pupae light in 15+ acres of head cabbage and cauliflower at Volcano and Waimea, Hawaii Island. Although populations and damage light, pest remains problem on crucifers at these locations throughout most of year. Damage by IMPORTED CABBAGEWORM (Pieris rapae) variable in head cabbage on Maui and Hawaii Islands; moderate to heavy on formative heads in 2 acres of head cabbage at Kula, Maui, but recent control applications alleviated problem. Damage light in 10+ acres of same crop at Volcano and Waimea; only few larvae found. Damage by LEAFMINER FLIES (Liriomyza spp.) light to moderate on about one acre of celery at Waimea. No damage found on several acres of same crop. Damage light to small tomato planting at same location. (Miyahira, Mau).

Fruits and Ornamentals - Several undetermined larvae that fit larval description of a NOCTUID MOTH (Anua indiscriminata) found on strawberry guava (Psidium cattleianum) at Kahala, Oahu; two of these larvae pupated. (Shiroma). BANANA SKIPPER (Erionota thrax) light on banana at Wailua, Kapahi, Lihue, and Kipu on Kauai. Eggs, larvae, and pupae recovered; no adults observed. Damage light and almost unnoticeable. Less than 5 percent of banana plants damaged. Larval damage observed on Heliconia foliage at Lihue, but no larvae found. (Sugawa et al.). Islandwide survey for ORANGE SPINY WHITEFLY (Aleurocanthus spiniferus) on Oahu completed August 23. No new infested areas found other than those already reported. All orchids inspected during survey found uninfested. Random survey of citrus and rose plants at Lihue, Kapaa, Wailua, Kapahi, and Waimea revealed no infestations. (Mau). Damage by CHINESE ROSE BEETLE (Adoretus sinicus) light to moderate in 8 acres of grapes at Ulupalakua, Maui; about one percent of plants heavily damaged, but foliage damage to rest of plants light. Heavy damage observed on 30+ rose plants at Kahului, and light on similar number at Wailuku, Maui. (Miyahira).

LIGHT TRAP COLLECTIONS

	Tempera- ture °F.	Precip- itation (inches)	Type of trap	BL = blacklight I = incandescent MV = mercury vapor O = other Agrotis ipsilon (black cutworm)	Estigmene acrea (saltmarsh caterpillar)	Euxoa auxiliaris (army cutworm)	Faronta diffusa (wheat head armyworm)	Feltia subterranea (granulate cutworm)	Heliothis virescens (tobacco budworm)	H. zea (bollworm, corn earworm, tomato fruitworm)	Laspeyresia pomonella (codling moth)	Loxostege commixtalis (alfalfa webworm)	Loxostege rantalis (garden webworm)	Loxostege sticticalis (beet webworm)	Manduca quinquemaculata (tomato hornworm)	Manduca sexta (tobacco hornworm)	Ostrinia nubilalis (European corn borer)	Peridroma saucia (variegated cutworm)	Pseudaletia unipuncta (armyworm)	Spodoptera exigua (beet armyworm)	Spodoptera frugiperda (fall armyworm)	Spodoptera ornithogalli (yellowstriped armyworm)	Trichoplusia ni (cabbage looper)	Crops
ARIZONA																								
Mesa 8/10-25			BL	24		7				18						6		1		2178		185	192	
FLORIDA																								
Gainesville 8/23-29			BL					6	1	8						2			4	4	5	9	1	
KENTUCKY																								
Lexington 8/27-30			BL	1												1			5			15		
MINNESOTA																								
Fergus Falls 8/22-28			BL					5											4					
Worthington 8/22-28			BL																5					
MISSISSIPPI																								
Stoneville 8/23-29	68-93	0.31	2BL	33	2			41	103	787						1			18	100	67	373	3441	
NEW HAMPSHIRE																								
Lee 8/26			BL	1										1					1					
NEW JERSEY																								
Seabrook 8/21-27			7BL	6						10			24				24				3			
NEW MEXICO																								
Las Cruces 8/26-30			4BL							40					71	42								
OHIO																								
Wooster 8/24-30			BL	19													85	38	62		98	11	4	
OREGON (Counties)																								
Linn 8/26-30			BL	38														31						
Marion 8/26-30			BL	12														54						
TENNESSEE (Counties																								
Hardeman 8/26-30			BL	18	1														24			46		
Madison 8/26-30			BL	4	3					3					1	1			4			5		
WISCONSIN																								
Cedar Grove 8/21-26			BL														53		13					
Hancock 8/22-28			2BL														49	1	1					

Weather of the week continued from page 714.

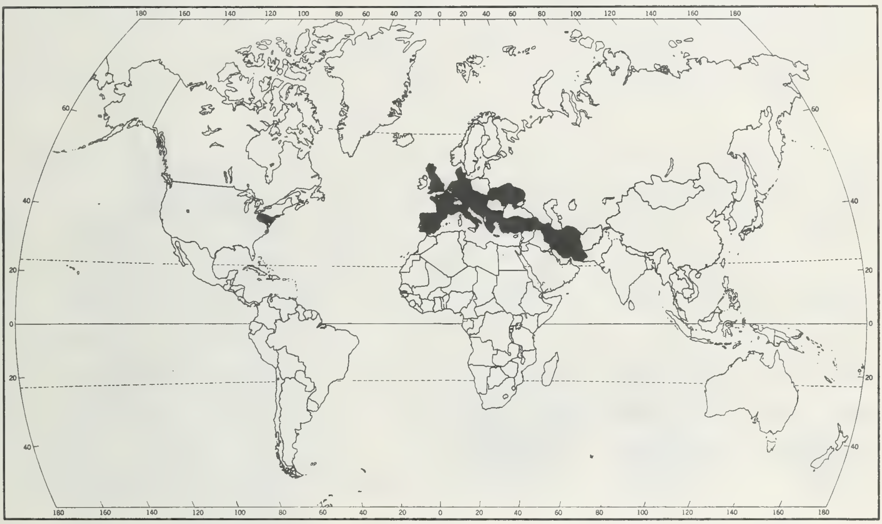
heavy rain from the middle Atlantic coast to the southern Plains on Thursday. Gurdon, Arkansas, and Smithville, Oklahoma, each received nearly 3 inches of rain. Friday, heavy rains continued from the Atlantic coast to the southern Plains. Persistent rain produced flooding of many streams and city streets from Texas to Georgia. A cold front moving through the Midwest caused thundershowers from Lower Michigan through Missouri into eastern Colorado on Saturday. Locally heavy rains soaked southern Arkansas. On Sunday, a cold front continued to trigger numerous thundershowers from the Ohio Valley into the central Plains.

TEMPERATURE: Unseasonably cool air covered the Nation's midsection while eastern and western perimeters remained abnormally warm during the week. The Midwest recorded temperatures averaging 6 to 11 degrees below normal. In the Pacific Northwest, temperatures averaged from 7 to 11 degrees above normal, while along the mid-Atlantic seaboard temperatures were 6 and 7 degrees above normal. Monday, most of the Nation enjoyed fair weather. Maximum temperatures ranged from 59 degrees at Brookings, Oregon, to 113 degrees at Blythe, California. A cold front stretching through the Midwest produced some sharply contrasting temperatures early Tuesday morning. Morning lows just to the south of the front were in the low 70's while behind it most places were in the 40's. Wednesday, most of the Nation reported early morning temperatures in the 60's. A major exception was south of a cold front from the southern Plains to the mid and lower Atlantic coast where temperatures were generally in the 70's. Cool air settled over the Nation's midsection on Thursday. Early morning low temperatures dropped into the 30's in parts of the northern Plains. St. Joseph, Missouri, recorded 44 degrees, a record low for this date. Friday, maximum temperatures ranged from 56 degrees at Lewiston, Montana, to 111 degrees at Blythe, California. The coolest temperature was 34 degrees at Estes Park, Colorado. Unseasonably cool air pushed deeply into the central Plains and mid-Mississippi Valley and upper Great Lakes area on Saturday. Early morning temperatures dipped into the 30's in portions of the Dakotas. Sunday, a High pressure center over Iowa brought cool overnight temperatures from the northern Rockies to the Great Lakes. Nighttime readings were in the 30's in parts of North Dakota and Minnesota.

European Alfalfa Beetle in the U.S.-1974

Introduction: The collection of two live adults of European alfalfa beetle (*Subcoccinella vigintiquatuorpunctata* (L.)) in meadowlands near Hackensack in Bergen County, New Jersey, June 28, 1973, by R.L. Jacques were thought to be the first record of this phytophagous coccinellid in the United States. The specimens were determined by R.D. Gordon in May 1974. However, an adult found resting on crown vetch (*Coronilla varia*) near Manada Hill in Dauphin County, Pennsylvania, August 15, 1972, by A.G. Wheeler, and confirmed by T.J. Henry, predated the find in New Jersey as the first record in this country.

Distribution: European alfalfa beetle is a phytophagous species in the same subfamily (Epilachninae) as *Epilachna varivestis* Mulsant (Mexican bean beetle), and has been reported as a serious pest of alfalfa in temperate and southern Europe and in Turkey. Damage has been recorded frequently in England, Germany, Denmark, and France, and has been reported in Italy and Iran. In the United States, this coccinellid has been recorded from one county in Maryland, 6 counties in New Jersey, 3 in Ohio, 19 in Pennsylvania, and 3 counties in West. Virginia. This pest has been intercepted one time in the U.S., on *Crataegus* sp. for propagation at Hoboken, New Jersey, February 26, 1948, in passenger baggage.



Distribution of *Subcoccinella 24-punctata*

Hosts: European alfalfa beetle is a pest principally of alfalfa (lucerne) in Europe, but apparently it can also live upon other legumes, particularly clover. It has been recorded on 70 species of plants in 12 families including beet, carnation, bouncing bet, cow-wheat, catch-fly, dianthus, and also on dahlia in the Netherlands. To date it has been found feeding only on bouncing bet (*Saponaria officinalis*) (Fig. 1), campion (*Lychnus alba*), and oatgrass (*Arrhenatherum elatius*) in the U.S.

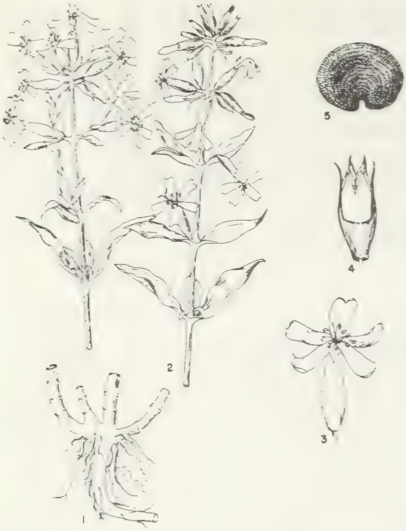


Fig. 1
Bouncing bet (Saponaria officinalis). 1- lower part of plant; 2- flowering stems; 3- flower; 4- mature seed pod with part of calyx removed; 5- seed.

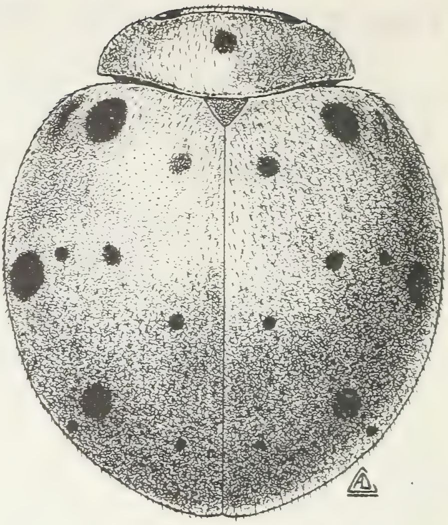


Fig. 2
Adult of S. 24-punctata, dorsal view.

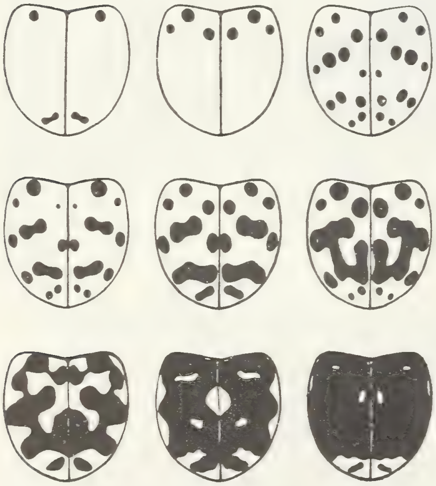


Fig. 3
Pattern variations on elytra of S. 24-punctata.

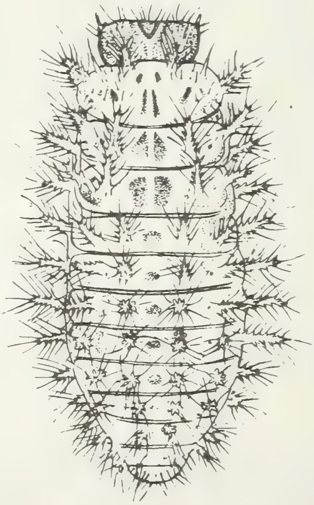


Fig. 4
Fourth-instar larva of S. 24-punctata.

Description: ADULT - Subhemispheric, 3-4 mm. in length, with convex elytra; it is a deep uniform orange-red, including the head, thorax, and underside of body which is quite flat. Normally, the fine velvety dorsal surface has 12 round, black spots on each elytra (Fig. 2), but there can be much variation in number and shape. Occasional individuals will be found with practically no spots, while others will have the elytra almost entirely black (Fig. 3). The head and pronotum have very few spots. Antennae very small; terminal segment larger than other segments, stubby, and very dark. Tibiae squat; tarsi 3-jointed, second joint extends beneath third joint.

LARVA - Fourth instar (Fig. 4) measures about 4.5-5 mm. by 2 mm.; yellowish with some darker spots on the head and tergites; spots are absent in the first instar. Bristles or branches of scoli over the dorsum are shorter than in Epilachna, 6 per segment (4 dorsal, 2 lateral) except no more than 4 in first row.

EGG - Yellow, ovoid, about 0.5-0.6 mm. on long axis.

Life History and Habits: Adults are rather clumsy, dropping to the ground when disturbed. However, in sunlight they are very active and are reported to fly. They feed on legumes by chewing large holes in the parenchyma. Adults overwinter under cover in various sites, becoming active in April or early May. Mating and egg laying take place in late May. Eggs are deposited on both sides of leaves, especially the upper surface. The female deposits about 50 yellow, ovoid eggs glued to the leaf surface in an upright position by the large end and close together in rows. After several days incubation the eggs hatch.

The larva quickly attaches to the nearest underlying tissues of the leaf and feeds in a characteristic manner. It cleans out the epidermis and parenchyma layers completely on the side upon which it is feeding, but the epidermis of the opposite side of the leaf is left as a fine transparent membrane. The larva does not tear off and ingest a plant fragment, but merely bites down on it, sucks the juice, and leaves it struck to the leaf. It then pulls back and repeats the process. After having moved backwards about one centimeter, while feeding, the larva turns around and begins again in the opposite direction parallel to the area it has just cleaned out. As it feeds, the larva sets aside all refuse in parallel linear piles on the cleared out zone. In a few hours the parenchyma of one leaflet is cleaned out and transformed into a transparent lacework with about 10 small strips of refuse (Fig. 5). The larva then moves to another leaflet.

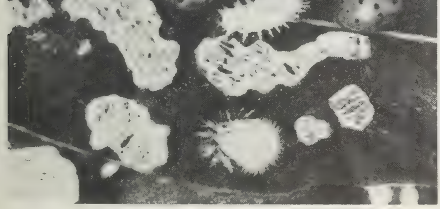


Fig. 5. Adults, larvae, and damage by S. 24-punctata on leaf of bouncing bet.

The larva reaches full growth in about 30 days. It attaches itself by its posterior end to the host plant, swells up, and pupates. In 6 to 7 days, the pupal case splits along the dorsal surface and the adult emerges. These second-generation adults continue to feed on the host until the end of summer or early autumn. They seek hibernation sites in late autumn.

Credits

Fig. 1 - Weeds of the North Central States. North Central Regional Publication No. 36, Circular 718 of the University of Illinois Agricultural Experiment Station, p. 59.

Fig. 2 - Drawn by A.D. Cushman from fresh caught specimen.

Fig. 3 - From Balachowsky, A.S. 1962. Entomologie Appliquée a L'Agriculture, Tome I, Coléoptères, fig. 219, p. 351. Masson et Cie Éditeurs, Paris.

Fig. 4 - Ibid, fig. 220, p. 352.

Fig. 5 - From color photo by Ray R. Kriner.

Distribution map prepared in Pest Survey and Technical Support, PPQ, APHIS, USDA.

Description translated from A.S. Balachowsky by Frances Krim, PPQ.

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U.S. Dept. Agr., Coop. Econ. Ins. Rpt. 24(36):731-734, 1974.

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Fig. 1 - [illegible]

Fig. 2 - [illegible]

Fig. 3 - [illegible]

Fig. 4 - [illegible]

Fig. 5 - [illegible]

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Selected References

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